WHAT IS CLAIMED IS:

1. A method for sending a frame of data from a first channel to a second channel using at least one of m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, the method comprising:

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

when a frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

selectively assigning the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$; and wherein

if the frame is assigned to the second channel, the frame is sent to the second channel from the i buffers and the status of the i buffers is changed to available; and

if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available.

2. The method of claim 1, wherein $s = q$.

3. The method of claim 1, wherein $s = q - i$.

4. The method of claim 2, wherein the selectively assigning step further comprises:

selectively assigning the frame to the second channel based on a level of congestion on the second channel.

5. The method of claim 4, wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the *s* buffers is below a first threshold;

discarding the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

6. The method of claim 4, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

discarding the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

7. The method of claim 4, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving *q* of the *n* buffers comprises:

reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

8. The method of claim 7, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

9. The method of claim 5, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

10. The method of claim 4, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receiving, at the first port, a frame from the first channel;

storing the frame in *i* of the *q* buffers;

changing the status of the *i* buffers to unavailable;

sending, to the second port, the identity of the *i* buffers storing the frame;

retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

sending the frame to the second channel; and

changing the status of the *i* buffers to available.

11. Computer-readable media embodying instructions executable by a computer to perform a method for sending a frame of data from a first channel to a second channel using at least one of *m* memory buffers for storing a frame, *m* being at least 2, in which *n* of the *m* buffers have an available status and *p* of the *m* buffers have an unavailable status, wherein $m = n + p$, the method comprising:

reserving *q* of the *n* buffers having the available status to the first channel;

reserving *r* of the *n* buffers having the available status to the second channel, wherein $q + r \leq n$;

when a frame is received from the first channel, storing the frame in *i* of the *q* buffers, wherein $1 \leq i \leq q$, and changing status of the *i* buffers to unavailable;

selectively assigning the frame to the second channel based on a number *s* of the *q* buffers, wherein $s \leq q$; and wherein

if the frame is assigned to the second channel, the frame is sent to the second channel from the *i* buffers and the status of the *i* buffers is changed to available; and

if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available.

12. The media of claim 11, wherein $s = q$.

13. The media of claim 11, wherein $s = q - i$.

14. The media of claim 12, wherein the selectively assigning step further comprises:

selectively assigning the frame to the second channel based on a level of congestion on the second channel.

15. The media of claim 14, wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the s buffers is below a first threshold;

discarding the frame when the second channel is not congested and the number of the s buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigning the frame to the second channel when the number of the s buffers is equal to or greater than the first threshold.

16. The media of claim 14, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the s buffers is below the first predetermined threshold of the associated class of service of the frame;

discarding the frame when the second channel is not congested and the number of the s buffers is below the second predetermined threshold of the associated class of service of the

frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

17. The media of claim 14, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving *q* of the *n* buffers comprises:

reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

18. The media of claim 17, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

19. The media of claim 15, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

20. The media of claim 14, wherein a first port is associated with the first channel and a second port is associated with the second channel, wherein the method further comprises:

receiving, at the first port, a frame from the first channel;

storing the frame in *i* of the *q* buffers;

changing the status of the *i* buffers to unavailable;

sending, to the second port, the identity of the *i* buffers storing the frame;

retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

sending the frame to the second channel; and

changing the status of the *i* buffers to available.

21. An apparatus for sending a frame of data from a first channel to a second channel using at least one of m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, the apparatus comprising:

first reservation means for reserving q of the n buffers having the available status to the first channel;

second reservation means for reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

store means for, when a frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

assigning means for selectively assigning the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$; and wherein

if the frame is assigned to the second channel, the frame is sent to the second channel from the i buffers and the status of the i buffers is changed to available; and

if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available.

22. The apparatus of claim 21, wherein $s = q$.

23. The apparatus of claim 21, wherein $s = q - i$.

24. The apparatus of claim 22, wherein the assigning means further comprises:

means for selectively assigning the frame to the second channel based on a level of congestion on the second channel.

25. The apparatus of claim 24, wherein the assigning means further comprises:

means for discarding the frame when the second channel is congested and the number of the s buffers is below a first threshold;

means for discarding the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

means for assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

26. The apparatus of claim 24, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the assigning means further comprises:

means for discarding the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

means for discarding the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

means for assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

27. The apparatus of claim 24, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the first reservation means comprises:

means for reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

28. The apparatus of claim 27, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

29. The apparatus of claim 25, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the means for assigning comprises:

means for sending, to the second port, the identity of the *i* buffers storing the frame.

30. The apparatus of claim 24, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receive means for receiving, at the first port, a frame from the first channel;

further store means for storing the frame in *i* of the *q* buffers;

first change means for changing the status of the *i* buffers to unavailable;

first send means for sending, to the second port, the identity of the *i* buffers storing the frame;

retrieve means for retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

second send means for sending the frame to the second channel; and

second change means for changing the status of the *i* buffers to available.

31. An apparatus for sending a frame of data from a first channel to a second channel, comprising:

a memory having *m* memory buffers for storing a frame, *m* being at least 2, in which *n* of the *m* buffers have an available status and *p* of the *m* buffers have an unavailable status, wherein $m = n + p$;

a queue controller to reserve *q* of the *n* buffers having the available status to the first channel, and to reserve *r* of the *n* buffers having the available status to the second channel, wherein $q + r \leq n$; and

an ingress module to, when a frame is received from the first channel, store the frame in *i* of the *q* buffers, wherein $1 \leq i \leq q$, and changes status of the *i* buffers to unavailable; and wherein

the queue controller selectively assigns the frame to the second channel based on a number *s* of the *q* buffers, wherein $s \leq q$;

if the frame is assigned to the second channel, the frame is sent to the second channel from the *i* buffers and the status of the *i* buffers is changed to available; and

if the frame is not assigned to the second channel, the frame is discarded and the status of the *i* buffers is changed to available.

32. The apparatus of claim 31, wherein $s = q$.

33. The apparatus of claim 31, wherein $s = q - i$.

34. The apparatus of claim 32, wherein the queue controller selectively assigns the frame to the second channel based on a level of congestion on the second channel.

35. The apparatus of claim 34, wherein the queue controller:

discards the frame when the second channel is congested and the number of the *s* buffers is below a first threshold;

discards the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigns the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

36. The apparatus of claim 34, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the queue controller:

discards the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

discards the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the

frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigns the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

37. The apparatus of claim 34, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the queue controller:

reserves the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

38. The apparatus of claim 37, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

39. The apparatus of claim 35, further comprising:

a first port associated with the first channel; and

a second port associated with the second channel; and wherein

the queue controller sends, to the second port, the identity of the *i* buffers storing the frame.

40. The apparatus of claim 34, further comprising:

a first port to receive a frame from the first channel; and

a second port associated with the second channel; and wherein

the queue controller receives, at the first port, a frame from the first channel, stores the frame in *i* of the *q* buffers; changes the status of the *i* buffers to unavailable; sends, to the second port, the identity of the *i* buffers storing the frame; retrieves, at the second port, the frame using the identity of the *i* buffers storing the frame; sends the frame to the second channel; and changes the status of the *i* buffers to available.

41. A method for sending a frame of data from a first device to a second device through a network switch having *m* memory buffers for storing a frame, *m* being at least 2, in

which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the method comprising:

selecting, by the first device, the second device as a destination for the frame;

sending, by the first device, the frame to the first channel;

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

when the frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

selectively assigning the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$;

wherein if the frame is assigned to the second channel, the frame is sent to the second channel from the i buffers and the status of the i buffers is changed to available; and

wherein if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available; and

receiving, by the second device, the frame from the second channel if the frame is assigned to the second channel.

42. The method of claim 41, wherein $s = q$.

43. The method of claim 41, wherein $s = q - i$.

44. The method of claim 42, wherein the selectively assigning step further comprises:

selectively assigning the frame to the second channel based on a level of congestion on the second channel.

45. The method of claim 44, wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the *s* buffers is below a first threshold;

discarding the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

46. The method of claim 44, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

discarding the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

47. The method of claim 44, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving *q* of the *n* buffers comprises:

reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

48. The method of claim 47, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

49. The method of claim 45, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the i buffers storing the frame.

50. The method of claim 44, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receiving, at the first port, a frame from the first channel;

storing the frame in i of the q buffers;

changing the status of the i buffers to unavailable;

sending, to the second port, the identity of the i buffers storing the frame;

retrieving, at the second port, the frame using the identity of the i buffers storing the frame;

sending the frame to the second channel; and

changing the status of the i buffers to available.

51. Computer-readable media embodying instructions executable by a computer to perform a method for sending a frame of data from a first device to a second device through a network switch having m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the method comprising:

selecting, by the first device, the second device as a destination for the frame;

sending, by the first device, the frame to the first channel;

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q+r \leq n$;

when the frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

selectively assigning the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$;

wherein if the frame is assigned to the second channel, the frame is sent to the second channel from the i buffers and the status of the i buffers is changed to available; and

wherein if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available; and

receiving, by the second device, the frame from the second channel if the frame is assigned to the second channel.

52. The media of claim 51, wherein $s = q$.

53. The media of claim 51, wherein $s = q - i$.

54. The media of claim 52, wherein the selectively assigning step further comprises:

selectively assigning the frame to the second channel based on a level of congestion on the second channel.

55. The media of claim 54, wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the s buffers is below a first threshold;

discarding the frame when the second channel is not congested and the number of the s buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

56. The media of claim 54, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the selectively assigning step further comprises:

discarding the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

discarding the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

57. The media of claim 54, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving *q* of the *n* buffers comprises:

reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

58. The media of claim 57, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

59. The media of claim 55, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

60. The media of claim 54, wherein a first port is associated with the first channel and a second port is associated with the second channel, wherein the method further comprises:

receiving, at the first port, a frame from the first channel;

storing the frame in i of the q buffers;

changing the status of the i buffers to unavailable;

sending, to the second port, the identity of the i buffers storing the frame;

retrieving, at the second port, the frame using the identity of the i buffers storing the frame;

sending the frame to the second channel; and

changing the status of the i buffers to available.

61. An apparatus for sending a frame of data from a first device to a second device through a network switch having m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the apparatus comprising:

select means for selecting, by the first device, the second device as a destination for the frame;

send means for sending, by the first device, the frame to the first channel;

first reservation means for reserving q of the n buffers having the available status to the first channel;

second reservation means for reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

store means for when the frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

assigning means for selectively assigning the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$;

wherein if the frame is assigned to the second channel, the frame is sent to the second channel from the *i* buffers and the status of the *i* buffers is changed to available; and

wherein if the frame is not assigned to the second channel, the frame is discarded and the status of the *i* buffers is changed to available; and

receiving means for receiving, by the second device, the frame from the second channel if the frame is assigned to the second channel.

62. The apparatus of claim 61, wherein $s = q$.

63. The apparatus of claim 61, wherein $s = q - i$.

64. The apparatus of claim 62, wherein the assigning means further comprises:

means for selectively assigning the frame to the second channel based on a level of congestion on the second channel.

65. The apparatus of claim 64, wherein the assigning means further comprises:

means for discarding the frame when the second channel is congested and the number of the *s* buffers is below a first threshold;

means for discarding the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

means for assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

66. The apparatus of claim 64, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the assigning means further comprises:

means for discarding the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

means for discarding the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

means for assigning the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

67. The apparatus of claim 64, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the first reservation means comprises:

means for reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

68. The apparatus of claim 67, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

69. The apparatus of claim 65, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the means for assigning comprises:

means for sending, to the second port, the identity of the *i* buffers storing the frame.

70. The apparatus of claim 64, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receiver means for receiving, at the first port, a frame from the first channel;

further store means for storing the frame in *i* of the *q* buffers;

first change means for changing the status of the *i* buffers to unavailable;

first send means for sending, to the second port, the identity of the *i* buffers storing the frame;

retrieve means for retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

second send means for sending the frame to the second channel; and

second change means for changing the status of the i buffers to available.

71. A network comprising:

a network switch having m memory buffers for storing a frame of data, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$;

a first device connected to the network switch by a first channel;

a second device connected to the network switch by a second channel;

wherein the first device selects the second device as a destination for the frame and sends the frame to the first channel;

wherein the network switch reserves q of the n buffers having the available status to the first channel, and reserves r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

wherein when the frame is received from the first channel, the network switch stores the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changes status of the i buffers to unavailable; and

wherein the network switch selectively assigns the frame to the second channel based on a number s of the q buffers, wherein $s \leq q$;

wherein if the frame is assigned to the second channel, the frame is sent to the second channel from the i buffers and the status of the i buffers is changed to available; and

wherein if the frame is not assigned to the second channel, the frame is discarded and the status of the i buffers is changed to available; and

wherein the second device receives the frame from the second channel if the frame is assigned to the second channel.

72. The network of claim 71, wherein $s = q$.

73. The network of claim 71, wherein $s = q - i$.

74. The network of claim 72, wherein the network switch selectively assigns the frame to the second channel based on a level of congestion on the second channel.

75. The network of claim 74, wherein the network switch:

discards the frame when the second channel is congested and the number of the *s* buffers is below a first threshold;

discards the frame when the second channel is not congested and the number of the *s* buffers is below a second threshold, wherein the first threshold is greater than the second threshold; and

assigns the frame to the second channel when the number of the *s* buffers is equal to or greater than the first threshold.

76. The network of claim 74, wherein each frame has one of a plurality of classes of service, wherein each class of service has associated therewith first and second predetermined thresholds, and wherein the network switch:

discards the frame when the second channel is congested and the number of the *s* buffers is below the first predetermined threshold of the associated class of service of the frame;

discards the frame when the second channel is not congested and the number of the *s* buffers is below the second predetermined threshold of the associated class of service of the frame, wherein the first predetermined threshold of the associated class of service of the frame is greater than the second predetermined threshold of the associated class of service of the frame; and

assigns the frame to the second channel when the number of the *s* buffers is equal to or greater than the first predetermined threshold of the associated class of service of the frame.

77. The network of claim 74, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the network switch reserves the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

78. The network of claim 77, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

79. The network of claim 75, wherein the network switch comprises:

a first port associated with the first channel;

a second port associated with the second channel; and

a queue controller to send, to the second port, the identity of the i buffers storing the frame.

80. The network of claim 74, wherein the network switch comprises:

a first port to receive a frame from the first channel;

a second port associated with the second channel; and

a queue controller to receive, at the first port, a frame from the first channel, stores the frame in i of the q buffers; changes the status of the i buffers to unavailable; sends, to the second port, the identity of the i buffers storing the frame; retrieves, at the second port, the frame using the identity of the i buffers storing the frame; sends the frame to the second channel; and changes the status of the i buffers to available.

81. A method for sending a frame of data from a first channel to a second channel using at least one of m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, the method comprising:

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

when a frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

sending the frame to the second channel and changing the status of the i buffers to available; and

exercising flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$.

82. The method of claim 81, wherein $s = q$.

83. The method of claim 81, wherein $s = q - i$.

84. The method of claim 82, further comprising:

terminating flow control on the first channel when the number of s buffers is above a second predetermined threshold.

85. The method of claim 82, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving q of the n buffers comprises:

reserving the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

86. The method of claim 85, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

87. The method of claim 84, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the i buffers storing the frame.

88. The method of claim 82, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receiving, at the first port, a frame from the first channel;

storing the frame in i of the q buffers;

changing the status of the i buffers to unavailable;

sending, to the second port, the identity of the i buffers storing the frame;

retrieving, at the second port, the frame using the identity of the i buffers storing the frame;

sending the frame to the second channel; and

changing the status of the i buffers to available.

89. The method of claim 82, wherein the exercising step comprises:

sending a pause frame to the first channel.

90. The method of claim 84, wherein the terminating step comprises:

sending a pause release frame to the first channel.

91. Computer-readable media embodying instructions executable by a computer to perform a method for sending a frame of data from a first channel to a second channel using at least one of m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, the method comprising:

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

when a frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

sending the frame to the second channel and changing the status of the i buffers to available; and

exercising flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$.

92. The media of claim 91, wherein $s = q$.

93. The media of claim 91, wherein $s = q - i$.

94. The media of claim 92, wherein the method further comprises:

terminating flow control on the first channel when the number of *s* buffers is above a second predetermined threshold.

95. The media of claim 92, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving *q* of the *n* buffers comprises:

reserving the *q* available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

96. The media of claim 95, wherein the *q* available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

97. The media of claim 94, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

98. The media of claim 92, wherein a first port is associated with the first channel and a second port is associated with the second channel, wherein the method further comprises:

receiving, at the first port, a frame from the first channel;

storing the frame in *i* of the *q* buffers;

changing the status of the *i* buffers to unavailable;

sending, to the second port, the identity of the *i* buffers storing the frame;

retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

sending the frame to the second channel; and

changing the status of the *i* buffers to available.

99. The media of claim 92, wherein the exercising step comprises:

sending a pause frame to the first channel.

100. The media of claim 94, wherein the terminating step comprises:

sending a pause release frame to the first channel.

101. An apparatus for sending a frame of data from a first channel to a second channel using at least one of m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, the apparatus comprising:

first reservation means for reserving q of the n buffers having the available status to the first channel;

second reservation means for reserving r of the n buffers having the available status to the second channel, wherein $q + r \leq n$;

store means for, when a frame is received from the first channel, storing the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

send means for sending the frame to the second channel and changing the status of the i buffers to available; and

exercising means for exercising flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$.

102. The apparatus of claim 101, wherein $s = q$.

103. The apparatus of claim 101, wherein $s = q - i$.

104. The apparatus of claim 102, further comprising:

means for terminating flow control on the first channel when the number of s buffers is above a second predetermined threshold.

105. The apparatus of claim 102, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the first reservation means comprises:

means for reserving the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

106. The apparatus of claim 105, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

107. The apparatus of claim 104, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning means comprises:

means for sending, to the second port, the identity of the i buffers storing the frame.

108. The apparatus of claim 102, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

means for receiving, at the first port, a frame from the first channel;

means for storing the frame in i of the q buffers;

means for changing the status of the i buffers to unavailable;

means for sending, to the second port, the identity of the i buffers storing the frame;

means for retrieving, at the second port, the frame using the identity of the i buffers storing the frame;

means for sending the frame to the second channel; and

means for changing the status of the i buffers to available.

109. The apparatus of claim 102, wherein the exercising means comprises:

means for sending a pause frame to the first channel.

110. The apparatus of claim 104, wherein the terminating means comprises:

means for sending a pause release frame to the first channel.

111. An apparatus for sending a frame of data from a first channel to a second channel comprising:

a memory having m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$;

a queue controller to reserve q of the n buffers having the available status to the first channel, and to reserve r of the n buffers having the available status to the second channel, wherein $q + r \leq n$; and

an ingress module associated with the first channel to, when a frame is received from the first channel, store the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changing status of the i buffers to unavailable;

wherein the ingress module associated with the first channel exercises flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$; and

wherein the queue controller sends the frame to the second channel and changes the status of the i buffers to available.

112. The apparatus of claim 111, wherein $s = q$.

113. The apparatus of claim 111, wherein $s = q - i$.

114. The apparatus of claim 112, wherein the ingress module terminates flow control on the first channel when the number of s buffers is above a second predetermined threshold.

115. The apparatus of claim 112, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the queue controller reserves the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

116. The apparatus of claim 115, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

117. The apparatus of claim 114, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the queue controller sends, to the second port, the identity of the i buffers storing the frame.

118. The apparatus of claim 112, wherein:

the ingress module receives a frame from the first channel, stores the frame in i of the q buffers, and changes the status of the i buffers to unavailable;

the queue controller sends, to the second port, the identity of the i buffers storing the frame; and

the egress module retrieves, at the second port, the frame using the identity of the i buffers storing the frame, sends the frame to the second channel, and changes the status of the i buffers to available.

119. The apparatus of claim 112, wherein the ingress module sends a pause frame to the first channel.

120. The apparatus of claim 114, wherein the ingress module sends a pause release frame to the first channel.

121. A method for sending a frame of data from a first device to a second device through a network switch having m memory buffers for storing a frame, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the method comprising:

selecting, by the first device, the second device as a destination for the frame;

sending, by the first device, the frame to the first channel;

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q+r \leq n$;

wherein when the frame is received from the first channel, the network switch stores the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changes status of the i buffers to unavailable;

wherein the network switch sends the frame to the second channel and changes the status of the i buffers to available;

wherein the network switch exercises flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$; and

receiving, by the second device, the frame from the second channel.

122. The method of claim 121, wherein $s = q$.

123. The method of claim 121, wherein $s = q - i$.

124. The method of claim 122, further comprising:

terminating flow control on the first channel when the number of s buffers is above a second predetermined threshold.

125. The method of claim 122, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving q of the n buffers comprises:

reserving the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

126. The method of claim 125, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

127. The method of claim 124, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

128. The method of claim 122, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

receiving, at the first port, a frame from the first channel;

storing the frame in *i* of the *q* buffers;

changing the status of the *i* buffers to unavailable;

sending, to the second port, the identity of the *i* buffers storing the frame;

retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

sending the frame to the second channel; and

changing the status of the *i* buffers to available.

129. The method of claim 122, wherein the exercising step comprises:

sending a pause frame to the first channel.

130. The method of claim 124, wherein the terminating step comprises:

sending a pause release frame to the first channel.

131. Computer-readable media embodying instructions executable by a computer to perform a method for sending a frame of data from a first device to a second device through a network switch having *m* memory buffers for storing a frame, *m* being at least 2, in which *n* of the *m* buffers have an available status and *p* of the *m* buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the method comprising:

selecting, by the first device, the second device as a destination for the frame;

sending, by the first device, the frame to the first channel;

reserving q of the n buffers having the available status to the first channel;

reserving r of the n buffers having the available status to the second channel, wherein $q+r \leq n$;

wherein when the frame is received from the first channel, the network switch stores the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changes status of the i buffers to unavailable;

wherein the network switch sends the frame to the second channel and changes the status of the i buffers to available;

wherein the network switch exercises flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$; and

receiving, by the second device, the frame from the second channel.

132. The media of claim 131, wherein $s = q$.

133. The media of claim 131, wherein $s = q - i$.

134. The media of claim 132, wherein the method further comprises:

terminating flow control on the first channel when the number of s buffers is above a second predetermined threshold.

135. The media of claim 132, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the step of reserving q of the n buffers comprises:

reserving the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

136. The media of claim 135, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

137. The media of claim 134, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning step comprises:

sending, to the second port, the identity of the *i* buffers storing the frame.

138. The media of claim 132, wherein a first port is associated with the first channel and a second port is associated with the second channel, wherein the method further comprises:

receiving, at the first port, a frame from the first channel;

storing the frame in *i* of the *q* buffers;

changing the status of the *i* buffers to unavailable;

sending, to the second port, the identity of the *i* buffers storing the frame;

retrieving, at the second port, the frame using the identity of the *i* buffers storing the frame;

sending the frame to the second channel; and

changing the status of the *i* buffers to available.

139. The media of claim 132, wherein the exercising step comprises:

sending a pause frame to the first channel.

140. The media of claim 134, wherein the terminating step comprises:

sending a pause release frame to the first channel.

141. An apparatus for sending a frame of data from a first device to a second device through a network switch having *m* memory buffers for storing a frame, *m* being at least 2, in which *n* of the *m* buffers have an available status and *p* of the *m* buffers have an unavailable status, wherein $m = n + p$, wherein the first device is connected to the network switch by a first channel and the second device is connected to the network switch by a second channel, the apparatus comprising:

select means for selecting, by the first device, the second device as a destination for the frame;

send means for sending, by the first device, the frame to the first channel;

first reservation means for reserving q of the n buffers having the available status to the first channel;

second reservation means for reserving r of the n buffers having the available status to the second channel, wherein $q+r \leq n$;

wherein when the frame is received from the first channel, the network switch stores the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changes status of the i buffers to unavailable;

wherein the network switch sends the frame to the second channel and changes the status of the i buffers to available;

wherein the network switch exercises flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$; and

receive means for receiving, by the second device, the frame from the second channel.

142. The apparatus of claim 141, wherein $s = q$.

143. The apparatus of claim 141, wherein $s = q - i$.

144. The apparatus of claim 142, further comprising:

means for terminating flow control on the first channel when the number of s buffers is above a second predetermined threshold.

145. The apparatus of claim 142, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the first reservation means comprises:

means for reserving the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

146. The apparatus of claim 145, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

147. The apparatus of claim 144, wherein a first port is associated with the first channel and a second port is associated with the second channel, and wherein the assigning means comprises:

means for sending, to the second port, the identity of the i buffers storing the frame.

148. The apparatus of claim 142, wherein a first port is associated with the first channel and a second port is associated with the second channel, further comprising:

means for receiving, at the first port, a frame from the first channel;

means for storing the frame in i of the q buffers;

means for changing the status of the i buffers to unavailable;

means for sending, to the second port, the identity of the i buffers storing the frame;

means for retrieving, at the second port, the frame using the identity of the i buffers storing the frame;

means for sending the frame to the second channel; and

changing the status of the i buffers to available.

149. The apparatus of claim 142, wherein the exercising step comprises:

sending a pause frame to the first channel.

150. The apparatus of claim 144, wherein the terminating step comprises:

sending a pause release frame to the first channel.

151. A network comprising:

a network switch having m memory buffers for storing a frame of data, m being at least 2, in which n of the m buffers have an available status and p of the m buffers have an unavailable status, wherein $m = n + p$;

a first device connected to the network switch by a first channel; and

a second device connected to the network switch by a second channel;

wherein the network switch reserves q of the n buffers having the available status to the first channel, and reserves r of the n buffers having the available status to the second channel, wherein $q+r \leq n$;

wherein when a frame is received from the first channel, the network switch stores the frame in i of the q buffers, wherein $1 \leq i \leq q$, and changes status of the i buffers to unavailable;

wherein the network switch sends the frame to the second channel and changes the status of the i buffers to available;

wherein the network switch exercises flow control on the first channel when a number s of the q buffers is below a predetermined threshold, wherein $s \leq q$; and

wherein the second device receives the frame from the second channel.

152. The network of claim 151, wherein $s = q$.

153. The network of claim 151, wherein $s = q - i$.

154. The network of claim 152, wherein the network switch terminates flow control on the first channel when the number of s buffers is above a second predetermined threshold.

155. The network of claim 152, wherein each frame has one of a plurality of classes of service associated therewith, and wherein the network switch reserves the q available buffers for the first channel based on one of the classes of service associated with a frame received from the first channel.

156. The network of claim 155, wherein the q available buffers are reserved for the first channel based on the one class of service of a last frame received from the first channel.

157. The network of claim 154, wherein the network switch comprises:

a first port associated with the first channel;

a second port associated with the second channel; and

a queue controller to send, to the second port, the identity of the *i* buffers storing the frame.

158. The network of claim 152, wherein the network switch comprises:

an ingress module to receive a frame from the first channel;

a queue controller to store the frame in *i* of the *q* buffers, change the status of the *i* buffers to unavailable, and send, to the second port, the identity of the *i* buffers storing the frame; and

an egress module to retrieve, at the second port, the frame using the identity of the *i* buffers storing the frame, send the frame to the second channel, and change the status of the *i* buffers to available.

159. The network of claim 152, wherein the network switch sends a pause frame to the first channel.

160. The network of claim 154, wherein the network switch sends a pause release frame to the first channel.